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KENNEDY SPACE CENTER, FLORIDA 32899

REPLY TO
ATTN OF:

AA-RQA

JAN 15 1971

TO: Distribution


FROM: Manager, Apollo-Skylab Programs, AA

SUBJECT: Skylab Program Directive No. 16A dated November 19, 1970,
subject: Skylab Program Materials Policy

REFERENCE: (a) Briefing note to Dr. Debus from AA dated January 15, 1971,
subject: Skylab Program Directive No. 16A, "Skylab
Program Materials Policy"

The revised subject directive has been received and significant changes are summarized in reference (a) and enclosure (2).

At this time an implementation directive is not planned. LS presently has a system to assure unauthorized materials are not used in and around Apollo spacecraft. A re-evaluation of the need for an implementing directive will be made once MSC and MSFC provide the requirements for materials to be allowed in and around the Skylab crew inhabited space modules.


Thomas W. Morgan
Brigadier General, USAF

Enclosures:

- (1) Reference (a)
- (2) Summary of Significant Changes in SLPD #16A
- (3) SLPD #16A

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Dr. Debus:

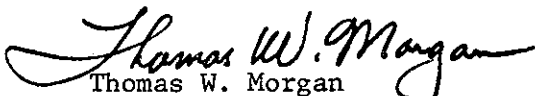
SUBJECT: Skylab Program Directive No. 16A, "Skylab Program Materials Policy"

The first revision to the existing Skylab Program Directive 16 was recently issued by the Skylab Program Director. The revision was essentially a complete rewrite of the directive, including changing the title from "Nonmetallic Materials Policy" to "Skylab Program Materials Policy;" the directive and a summary of the revisions will be circulated to the line directorates for their information.

Although the directive has been considerably changed, it does not have a significant impact upon KSC because it is principally addressed to material controls required on Skylab flight modules to be implemented by the Development Centers.

Changes of particular interest to this Center are:

1. Each Program Office is no longer required to prepare an implementation plan, but now the plan is required of each Development Center.
2. Each Center is now required to establish a focal point for management of the materials control program. This causes no problem to KSC and the focal point will be established from within the Program Office.


Thomas W. Morgan
Brigadier General, USAF

Enclosure:
(1) SLPD #16A

SUMMARY OF SIGNIFICANT CHANGES
IN SKYLAB PROGRAM DIRECTIVE NO. 16A

1. "Nonmetallic" has been deleted from the subject and the deletion is carried throughout the body of the document; the references have been revised to reflect additional material evaluation procedures and requirements from MSC and MSFC, and NASA Handbook references have been deleted.

2. Section I - This section has been changed to broaden the evaluated characteristics of materials from flammability and off-gassing to flammability, explosion, and toxicity. In addition, the requirements for a single set of test criteria and one data bank have been deleted and requirements for compatible test evaluation and data banks between Development Centers (MSFC and MSC) have been added.

3. Section III - This section has been changed to reflect additions in the Reference Section and has been considerably revised and expanded to include more detailed requirements for an implementation plan. Significant changes in Section III include:

a. Responsibility for preparing an implementation plan has been changed from each Program Office to each Development Center Program Office. Additionally, the plan is required to respond to the appropriate referenced requirements documents as well as the detailed requirements in the revised directive.

b. Paragraph III.D. has been added to make each Development Center Skylab Manager responsible for approval of deviations for his affected area instead of submitting deviations to the MSC Materials Selection Review Board.

c. Paragraph III.F. has been added and requires certification of material acceptance when hardware developed by one Center (MSC and MSFC) is transferred to another Center.

d. Paragraph III.G. has been added and requires each Center Program Office to establish a focal point for the management of the materials control program and to submit the individual's name to the Skylab Program Director.

e. Paragraph III.H. was added at KSC's request and requires Development Centers to provide to KSC the requirements for materials to be allowed in and around the crew inhabited space modules during KSC prelaunch activities.

SKYLAB
PROGRAM DIRECTIVE NO. 16A

TO : DISTRIBUTION

FROM:


DIRECTOR, SKYLAB PROGRAM

SUBJECT: SKYLAB PROGRAM MATERIALS POLICY

- REF : (a) D-NA-0002, dated July 1968, Procedures and Requirements and the Flammability and Off-Gassing Evaluation of Manned Spacecraft Nonmetallic Materials
(b) MSFC-SPEC-101A, Flammability, Odor and Toxicity Requirements and Test Procedures for Materials in Gaseous Oxygen Environments
(c) MSC-PA-D-67-13 (including Addendum #1) Apollo Spacecraft Nonmetallic Materials Requirements

I. PURPOSE:

The primary purpose in establishing the flammability, explosion and toxicity policy for material selection, control, test and evaluation on the Skylab Program is to emphasize the importance of the materials program and its relationship to crew safety and mission success. The need for effective control of material flammability, explosion and toxicity characteristics warrants continual attention of all concerned, and requires a high priority be given to the establishment on Skylab of a program which produces maximum confidence in the use and control of materials.

The program required by this directive will use as a base certain existing Apollo requirements. It will reflect a unified multi-center approach to optimize developed materials technology and maximize the results and benefits which are derived from future similar activities. To this end, compatible test evaluation and data banks will be established and used as the basis for the Skylab Program. Redundant testing of materials and the conduct of supplementary tests which prevent collation or comparison of test results will be eliminated wherever possible.

II. SCOPE:

This directive is applicable to all NASA organizations with cognizance over the proposed Skylab Program use of materials in space modules destined for habitation by men.

III. REQUIREMENTS:

- A. The materials categories and tests defined by reference (a) and (b) apply for MSC and MSFC developed hardware respectively with the exception that reference (c) shall cover the requirements for the CSM.
- B. Each development Center Skylab Program Office is responsible to see that an Implementation Plan is prepared in response to the appropriate requirements document (reference (a) and (b)). This plan will contain sections addressing materials management showing Center, supplier and contractor responsibilities. It shall also require:
 - 1. Initial selection of materials for use in hazardous environments shall utilize results of screening tests conducted in accordance with approved test procedures.
 - 2. Final verification and acceptance of materials for use in hazardous environments shall be based on analysis of tests of similar materials in the same or a "worst case" configuration, or on configuration test if data necessary to support such analysis is not available.
 - 3. Materials identification - The identification and documentation of materials usage in all hazardous environments in both original design and any changes.
 - 4. Usage evaluation - The categorization of material usages and rationale for such category assignment.
 - 5. Deviation procedures - The procedures involved in documentation and approval of materials which do not meet the established requirements of (1) and (2) above.
- C. Test Data and deviations will be exchanged between development centers and integration centers for visibility. Other data will be exchanged upon request. Copies of deviations will be sent to the Program Director (ML) for information.

- D. Each development center Skylab Manager is responsible for approval of deviations for his affected area.
- E. A composite report of all materials which could potentially contribute to flammability, explosion or toxicity hazards will be submitted prior to final customer acceptance. This report will be updated and re-presented at subsequent milestone reviews. It is intended that this composite report shall contain: The aggregate status of the materials listings from a flammability, explosion and toxicity standpoint; the data from configuration tests or analysis; the rationale why configuration tests are not required; and deviation approvals.
- F. Hardware developed by one Center and transferred to another Center (i.e., systems/subsystems or experiments delivered for installation in either OWS, AM, MDA or CSM) will require a certification of material acceptance to applicable criteria document. This certification should take the form of material descriptions and aggregate report as required by para. E above.
- G. Each Center Skylab Program Office will designate the focal point for management of the materials control program. The name of the individual(s) shall be submitted to the Program Director.
- H. The Development Center will supply to KSC the requirements for materials to be allowed in or around the crew inhabited Space Modules during KSC prelaunch activities.

IV. IMPLEMENTATION:

The requirements of this directive are effective immediately. Any request for deviation from the policy herein will be submitted to the Director, Skylab Program for approval.

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